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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/047,326	01/14/2002	Onur G. Guleryuz	AP121TP	7104

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EXAMINER

CHEN, PO WEI

ART UNIT PAPER NUMBER

2676

DATE MAILED: 08/04/2004

*[Handwritten signature]*

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/047,326

Applicant(s)

GULERYUZ ET AL.

Examiner

Po-Wei (Dennis) Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-10,12-18,20-24 and 33-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-10, 12-18, 20-24 and 33-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

In response to an Amendment received on May 24, 2004. This action is non-final.

Claims 1-2, 4-10, 12-18, 20-24 and 33-35 are pending in this application. Claims 1, 9 and 17 are independent claims.

The present title of the invention is "Fast Text/Graphics Resolution Improvement with Chain-Code Table Look-Up".

The Group Art Unit of the Examiner case is now 2676. Please use the proper Art Unit number to help us serve you better.

### *Claim Rejections - 35 USC § 102*

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 4-5, 8-9, 12-13, 16-17, 20-21, 24 and 33-35 are rejected under 35

U.S.C. 102(b) as being anticipated by Sakaue (US 6,052,489).

2. Regarding claim 1, Sakaue discloses an image output method comprising:

A method for improving resolution of a digital representation having a plurality of text or graphics pixels (lines 24-26 of column 2 and lines 15-29 of column 10);

Identifying a text or graphics pixel on a boundary of object of the digital representation (lines 23-46 of column 4 and Fig. 5);

For each pixel identified as on the boundary, tracing a group of pixels, including the initial boundary identified pixel, that constitute a local boundary segment and constructing an identifier indicative of the number and relative locations of the pixels of that local boundary segment (lines 35-43 of column 2, line 23 column 4 to line 44 of

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column 5 and Fig. 4-7; M represents number of pixels and coordinates represents relative locations);

Parameterizing and smoothing that local boundary segment, resulting in a new local boundary segment, without consideration of non-boundary segment data, by computing instructions for parameterizing and smoothing that local boundary segment; rendering the parameterized and smoothed boundary segment to increase the resolution of the text or graphics object (line 52 of column 8 to line 20 of column 10 and Fig. 3-4 and 17-20; while claim recites resulting a new local boundary segment, it is clear that after the smoothing signal applied to the contour segment, it can be considered as a new contour segment, as in Fig. 19. Also, it is clear that the smooth signal is being generated using only the extracted contour pixels).

3. Regarding claims 9, 17 statements presented above, with respect to claim 1 are incorporated herein.

4. Regarding claims 8, 16 and 24, statements presented above, with respect to claim 1 are incorporated herein. It is further noted that for each extracted contour pixel, a smoothing signal is generated (lines 35-43 and 51-58 of column 2 and Fig. 21).

5. Regarding claim 33, Sakaue discloses an image output method comprising:

The tracing step comprises searching and identifying each new pixel in the group with respect to a background neighbor pixel that is propagated from a penultimate-identified pixel to a just-identified pixel (line 52 of column 6 to line 7 of column 8 and Fig. 5-13).

6. Regarding claims 34-35 statements presented above, with respect to claim 33 are incorporated herein.

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7. Regarding claims 4-5, Sakaue discloses an image output method comprising:

The tracing step comprises identifying first and second contiguous sub-groups of pixels, each starting with the initial pixel and extending in first and second directions respectively relative to propagated background neighbor pixel and, if available, a just-identified pixel in that sub-group to construct the identifier; tracing N pixels in a first direction and N pixels in a second direction to construct the identifier based on a pre-determined set of rules used in the tracing step. (line 52 of column 6 to line 7 of column 8 and Fig. 5-13).

8. Regarding claims 12-13 and 20-21 statements presented above, with respect to claims 4-5 are incorporated herein.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2, 6-7, 10, 14-15, 18 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaue (US 6,052,489) in view of McCann et al. (US 4,777,651; refer to as McCann herein).

11. Regarding claim 2, Sakaue does not disclose the instructions are pre-computed, stored in a look-up table, indexed by the corresponding identifier, and directly accessed during the parameterizing and smoothing of that local boundary segment. McCann discloses a method picture coding system utilizing the method (lines 34-39 of column 2, lines 11-51 of column 6, lines 8-21 of column 8, lines 3-8 of column 19 and lines 18-24

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of column 20 and Tables I and II and Fig. 3-4 and 10-14; it is noted that each edge or boundary contour is being identified using chain-code with starting pixel and ending pixel. And chain-code is used as an index to the look-up table with operations instructions such as smoothing the pixels). It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the image smoothing process of McCann for the image smoothing process of Sakaue because McCann teaches that such image smoothing process will provide a totally automated image process system that is inexpensive and fast (lines 37-40 and lines 53-56 of column 1).

12. Regarding claims 6-7, Sakaue discloses an image output method comprising:

The instructions on parameterizing and smoothing comprise a differential representing a difference between the location of at least one pixel in the new local boundary segment and the location of that pixel in the corresponding un-parameterized and un-smoothed local boundary segment (lines 21-34 of column 10 and Fig. 21-23).

The instructions on parameterizing and smoothing comprise general occupancy information representing a difference between the location of the new local boundary segment and the location of the corresponding un-parameterized and un-smoothed local boundary segment (lines 21-34 of column 10 and Fig. 21-23).

Sakue does not disclose the instructions on parameterizing and smoothing stored in pre-computed look-up table, indexed by the corresponding identifier. However, this is known in the art taught by McCann, as statements presented above, with respect to claim 2 above are incorporated herein.

13. Regarding claims 10, 14-15, 18 and 22-23 statements presented above, with respect to claims 2 and 6-7 are incorporated herein.

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***Response to Arguments***

14. Applicant's arguments with respect to claims 1, 9 and 17 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

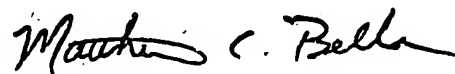
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on Monday-Thursday from 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen  
Examiner  
Art Unit 2676

Po-Wei (Dennis) Chen  
July 30, 2004



**MATTHEW C. BELLA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**